Ministry of Public Health
General Directorate

Towards a National Health Information System …

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Executive Summary

A reliable Health Information System is a crucial aspect of a surviving healthcare system in view of the fact that good quality health information is essential to move towards evidence-based and timely policy formulation. Due to the fact that the majority of health information exists in the Ministry Of Public Health, at both central and peripheral levels, the point of start towards the assessment of the Health Information System was an information audit at the level of the Ministry's Departments, both central and peripheral and an analysis of the form of availability of that information (manual or automated).

Then, taking a look at the essential health indicators that are to be generated, we defined the actual stakeholders in health information and the gaps.

Solutions to problems in information forms and flows were provided in both technical and administrative points of view at both central and peripheral levels.

At the central level, the formation of a Health Information Management Unit (HIMU) together with the implementation of an intranet will solve the information flow gap inside the ministry's departments.

At the periphery, the revision of the district health physicians report will simplify and standardize the information provision job for them and the upgrading and the implementation of the District Health Information System, done in 2000 in collaboration with *WHO*, will improve the quality of information and will facilitate the flow.

At the administrative level of the periphery as well, the strengthening of the District Health Department by technical equipment and personnel which will be a point of link between the MOPH and local stakeholders will ensure the quality and timeliness of external data feeding into the system.
Linking the DHD with the HIMU will smoothen the flow of health information between the ministry and the stakeholders.

Introduction

It is not in need of evidence to claim that a strong health information system (HIS) is an essential part of the health system. Gaps between supply and demand, gaps in some information on one hand, and data duplication on the other; lack of consistency in dissemination, and considerable overlap and duplication; all present barriers towards achieving a viable and dependable HIS. Moreover, the high variability in the quality of health information together with little standardization across definitions and methodologies, present a major barrier as well. The case of Lebanon is no exception to the whole Eastern Mediterranean Region's case. Good-quality health information is essential in view of the move towards evidence-based policy formulation. In addition, there is growing claim that health information systems are not functioning as they should and, there is an increasing awareness of widespread dissatisfaction among both the producers and users of health information.
In Lebanon there are great amounts of information present in a fragmented way. You might find many values for one specific indicator from different sources, few are the indicators that have a national value associated with them, and in those cases the national values might sometimes be questionable in view of their incomparable methodologies.

Moreover, it has not yet been possible to formulate a national strategy based on comprehensive assessment of national health information systems.
The current paper would allow the Ministry of Public Health (MOPH) to understand the gaps and opportunities, the available resources, as well as barriers to health information generation and use.

The purpose of this first effort, thus, is to propose recommendations that would facilitate improvement of reporting health information, through a smooth flow, together with a feasible action plan towards the achievement of a crucial building block of the Health system, namely Health Information System..

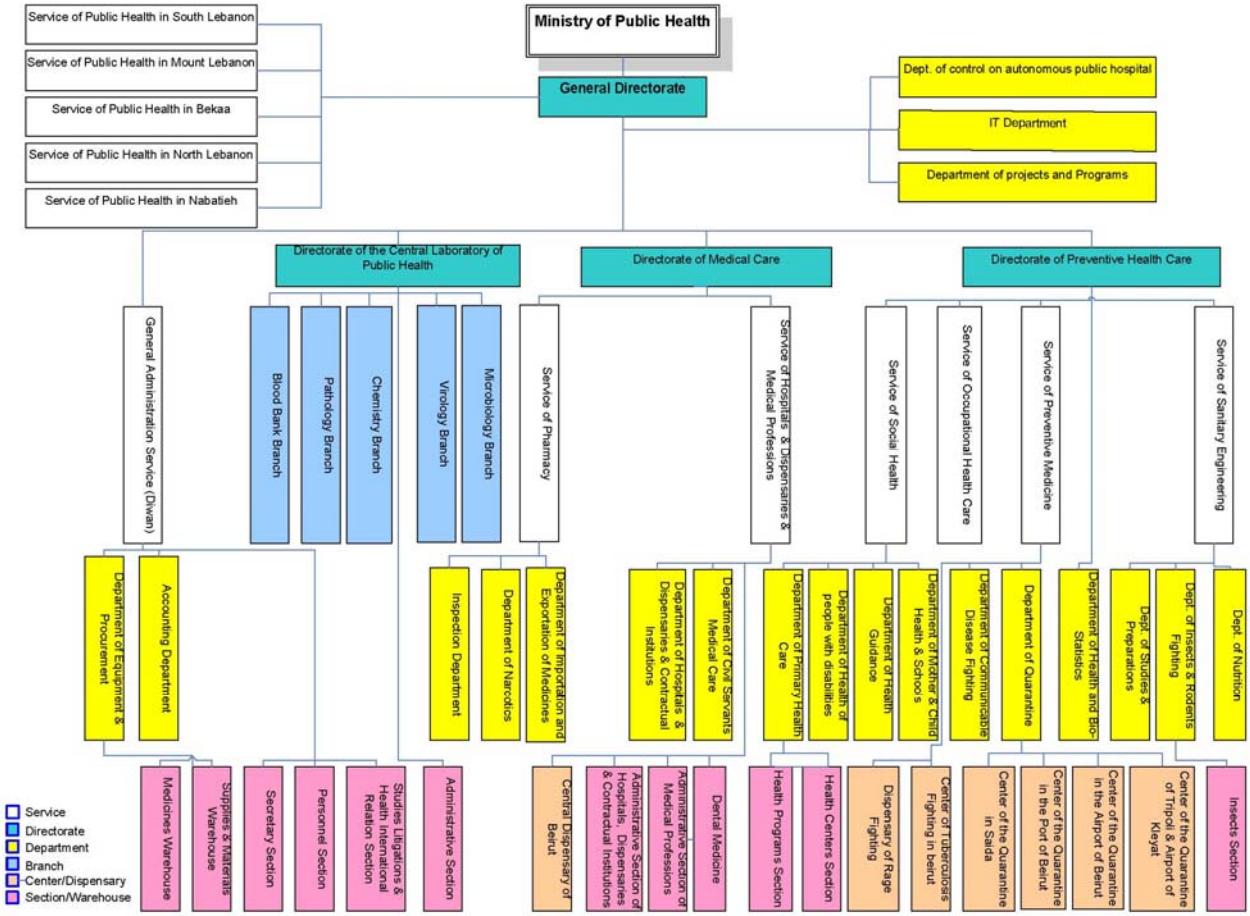
Methodology

In an attempt to define the gaps in information forms and flows at the MOPH, the first step was to conduct an information audit at the level of the Ministry's Departments- central and peripheral units. In that first step, interviews with available key informants were done in which each department defined the available information and the still needed ones. In addition, revision and analysis of some of the transaction forms that were recently developed at the level of departments that have direct services to citizens was done to define the information that can be generated.

Moreover, the available ICT systems were described. For that matter, a table was constructed in which available information was defined at the level of each department, together with their form of availability, and the primary information source. Information were then classified in terms of their importance to generate the essential health indicators.

Situation Analysis

1-Organizational chart of the Ministry of Public Health



2-Major Responsibilities of the MOPH various services

A-General Directorate

It has three departments directly associated with it in addition to the general administration service and the services of public health in the Mohafazat:

a- IT department:

-Dissemination of Ministry's information
-Information networking with other institutions

b- Department of projects and programs:

-Preparing the Ministry's Plan of Action and related policy plans
-Providing proposals for laws and decrees to meet the role of the MOH

c- Department of Control on Public Hospitals:

-Newly established, follows up on the performance indicators for public hospitals.

General Administration Service

-Ministry's Post Office
-Information Desk
-Assigning Standards for the Bids
-Issuing buyer's certificates for drugs and equipments
-Preparing the Budget
-Expense Allocation
-Employee's transactions
-Legal consultations for health related matters
-communication with international organizations
-Issuing and renewing employees' contracts and other certificates, includes HRH of the Ministry of health various departments and peripheral units.

Services of Public Health at the Mohafazats

-Responsible of the administrative health services of the districts under their supervision

***B- Directorate of Preventive Medicine*:**

Includes 4 services in addition to the department of statistics:

Department of Statistics

-Gathering health information from various stakeholders
-Information sharing inside and outside of the ministry
-Gathering statistical data and preparing statistical reports

Service of Sanitary Engineering

-Setting up food and nutrition strategies for food hygiene and food born diseases and malnutrition
-Conducting studies on children's nutritional status based on the Health file information
-Initiating health inspection activities and water safety studies
-Insects control
-Food safety
-Classification of the production industry
-Setting water safety standards

Service of preventive medicine:

-Gathering information on mandatory reported diseases
-Epidemiological surveillance and control
-Setting communicable disease programs
-Performing health inspection on passengers (In and out of Lebanon)
-Vaccinating Lebanese people traveling to high risk areas
-food inspection and sanitation on airplanes
-Initiating Epidemiologic Surveillance and assuring Primary Health care
-Training medical doctors on the principles of preventive medicine

Service of Social Health

-Setting and implementing health education programs
-initiating school health programs in collaboration with the Ministry of Education
-training health workers in public and private sectors
-preparing health education and promotion materials
-Responsible for Safe motherhood and child health programs
-Responsible for conducting studies and follow-ups in schools
-Responsible for performance of midwives ongoing training
-Training of Human Resources for Health in general
-Issuing and distributing the health file for children and reviewing its content

The Department of Health of the Disabled is under the service of social health but is not an active department

Service of Occupational Health

-Deals with diseases and risks of the job and job-related activities

***C- Directorate of Medical Care*:**

Includes two services:

Service of hospitals, dispensaries, and medical professions

-Handling records of patients treated at the expense of MOH
-Setting and controlling contracts of the MOH with Health service providers
-Performing medical audits on hospital bills
-issuing certificates of practice for medical professions
-issuing certificates for health facilities
-quality control on medical facilities

Service of Pharmacy

-Issuing certificates related to pharmacies and pharmacists' practice
-Drug pricing
-Drug industry management and control
-Narcotic drugs' imports, distribution, and statistics
-Medicinal imports/exports
-Drug registration and control
-Registration of non-medicinal health-related items
-Pharmacies' and drugstores' inspection
-Controlling fraud in the pharmaceutical industry

It is worth noting that some of the before mentioned departments are almost dormant, and very few, if any, activities are performed, either due to the lack of personnel or motivation, and the lack of funding. In addition, in 1996, a decree was issued to stop employment in the public sector, which resulted in overloaded personnel, with high average age structure and many neglected essential activities.
A new organizational structure of the MOPH is proposed, and is currently waiting for revision from MOPH's side, and then the necessary legislative measures to take effect. In parallel, we recommend the revision of the

departments' functions in view of some overlap and duplication of activities performed.

In addition to these departments, there are various committees that were established according to their specialized roles, these are the following:

-Medical audit committee
-Prosthetic committee
-Committee of control of communicable diseases
-Open heart committee
-Tobacco control committee
-Drug committees
-Permanent Medical Committee
-Official Medical committees (1 for each Mohafazat)

The Joint Programs between the MOPH, WHO and YMCA

Currently, there are 5 programs running, namely the National AIDS Program (NAP), the Tuberculosis Program (TB), Non-Communicable Disease Program (NCPD), Injuries and Accidents Program, Drugs registration and control program.

In addition to these programs, there is the YMCA contract with the MOPH to deliver drugs for chronic diseases all over Lebanon.

3-Information generated by various MOPH departments:

The Table below contains some of the major information generated by different administrative departments at MOPH:
Table 1: List of available information at various MOPH administrative units

MOPH Unit	Information Available	Source of info.	Form of availability
General Directorate / Drugs Committee	• Demographic information related to the patients • Clinical information1 • Treating physician	TFSA forms[2] (MPH12-1..MPH12-24)	Manual

[1] Information varies according to the disease application form

[2] See Annex 1 for a list of available application forms for drugs dispensing

Service of Hospitals, dispensaries and medical professions	• Number of hospitals contracted • Number of days-stay, patients, visas issued • Cost of medical care for patients covered by MOPH	• Hospitals (primary source). • Visa-Billing ICT system (secondary source) • Doctors Fees DB	-Excel sheets -Automated forms
Service of Sanitary Engineering	• Information related to imported water and soft drinks • List of importers /agents • List of manufacturers from different countries	Application form MPH34-1	Manual
	• Information related to imported insecticides and rodenticides • List of importers /agents • List of manufacturers from different countries	Application form MPH34-2	Manual
	• Information related to companies specialized in selling, filling, preparing, spraying, packaging and manufacturing of insecticides and rodenticides.	Application form MPH34-3	Manual
	• Information related to bottled water and soft drinks permitted by MOPH • Information related to applicants • Geographic information related to the factory • Geographic information related to water resources	Application form MPH34-4	Manual
	• Information related to imported supplements and vitamins • Information related to importers • List of manufacturers from	Application form MPH34-5	Manual

	different countries.		
Department of Statistics	• Registered Births and deaths • District physicians reports	• District physicians • Ministry of Interior through local offices	Manual forms
Dept. of Mother & Child Health Care & Schools Health	• Information related to licensed nurseries (address, owner, manager, physician, nb. of children, insurance) • Information related to human resources in nurseries	Applications form MPH312-1 & MPH312-2	Manual & Excel sheet
	• Number of health files distributed per hospital • Number of newborns per hospital/maternity	Hospitals and maternities	Manual sheets
Primary Health Care Department	• Distribution of PHC centers • Number of consultations per PHC center • Number of consultations per medical unit • Vaccination coverage • Essential drugs distributed by center	All MOPH Health centers, in addition to other PHC centers	Manual and automated sheets
Section of Preventive Medicine (ESU)	• Notifiable diseases (37 diseases) statistics • Cancer registry information • Cause of death in selected hospitals	All hospitals, health centers, clinics and labs	Some manual forms are still used, together with ICT applications
Medical Professions Section	• Information related to licensed hospitals (geographic info., address, beds distribution, human resources, medical equipment) • Information related to owner (demographic, address, education)	Applications form MPH221-1 &MPH221-2	Manual

	• Information related to human resources for health[3] (Demographic, address, education, training, colloquium)	Human Resources for Health Information System (HRH)	ICT system
	• Information related to Health Facilities[4] (Geographic info., address, manager info., human resources, medical equipment) • Information related to owner (demographic info., address, education)	Application forms MPH221-4 & MPH221-5	Manual & Excel sheet
	• Information related to specialized physicians and dentists (Demographic, address, specialty, education, training)	Human Resources for Health Information System (HRH)	ICT system
	• Information related to Medical Laboratories Managers (Demographic, address, specialty, education, training, colloquium)	Application forms MPH221-8	Manual
	• Information related to Audioprosthesists and Orthophonists (Demographic, address, education, training)	Application forms MPH221-12	Manual
Service of Pharmacy	• Information related to pharmacists (Demographic, address, education, training, colloquium)	HRH System since Jan. 2009	ICT system
	• Information related to pharmacies[5] licensed by MOPH (Geographic, address)	Application form MPH21-2	Manual
	• Information related to Drugs Warehouses licensed by MOPH(Address, manager, pharmacist)	Application form MPH21-4	Manual

[3] Physicians, Nurses, Midwives, Pharmacists, Dentists, Physiotherapists, Medical Laboratory Technician**s,** Health Inspectors, Dental Laboratory Technicians, Optometrists

[4] Dispensaries, Laboratories: nuclear, medical & pathology, Physiotherapy centres, Prostheses centres, Dental laboratories, Beautification and Esthetical centres, X-Ray centres.

[5] Including pharmacies inside hospitals

	• Information related to Drugs Closet in doctor's clinics	Application form MPH21-8	Manual
Department of Narcotics	• Quantity of Psychotropic imported and sold by all pharmacies[6]	*National Database System (NDS) *Reports from all pharmacies to Dep. Of Narcotics by the end of the year	Manual
Department of Importation & Exportation of Medicines	• Information related to imported drugs • Information related to importers • List of exporters by country	Application form MPH212-1	Manual
	• Information related to imported veterinary medicines and vaccines • Information related to importers	Application form MPH212-2	Manual
	• Information related to imported Laboratories Reagents, Culture Media, Enzymes, Rubber Contraceptives • Information related to importers/exporters	Application form MPH212-3	Manual
	• Information related to exported drugs • Information related to exporters • List of importers by country	Application form MPH212-4	Manual
	• Information related to imported Milk • Information related to importers • List of exporters by country	Application form MPH212-5	Manual
	• Information related to imported paramedical devices • Information related to importers	Application form MPH212-6	Manual

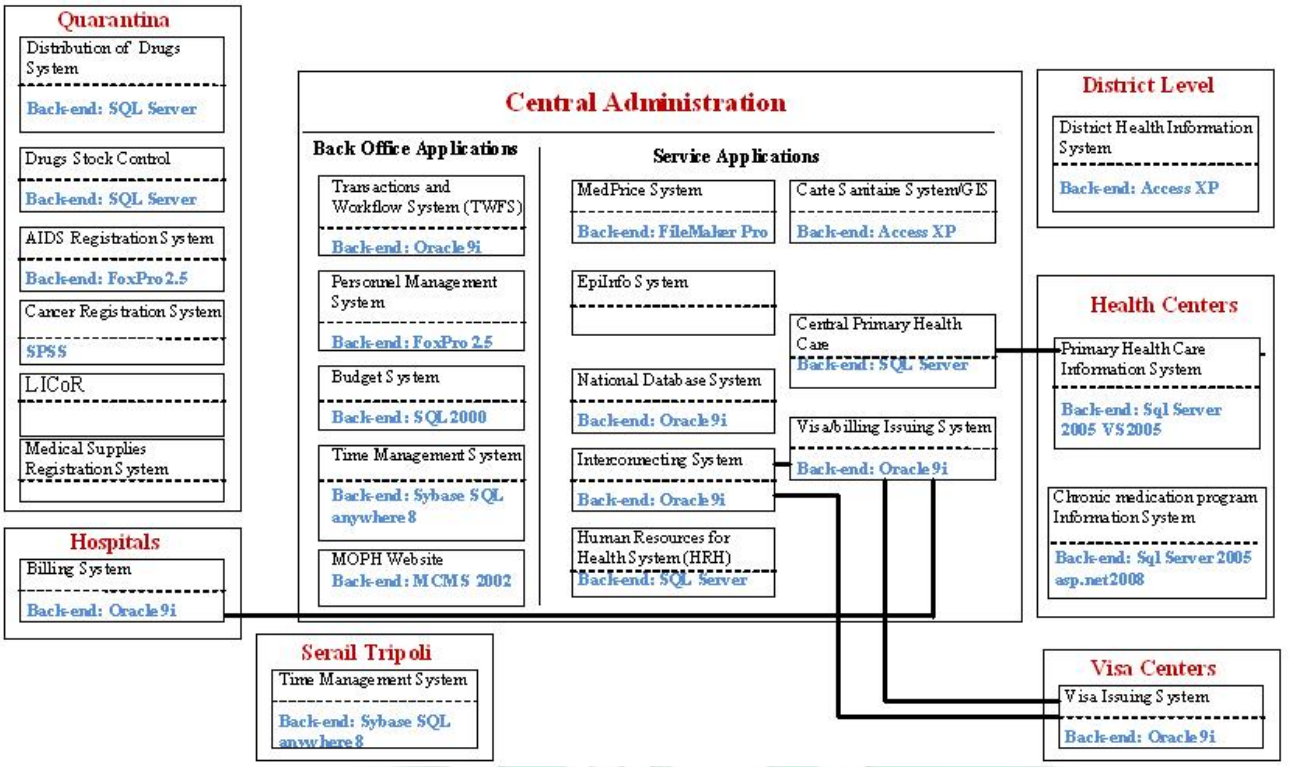
[6] See Annex 1

	• List of exporters by country		
	• Information related to exported Human blood and tissues for diagnosis • Information related to importers • List of exporters by country	Application form MPH212-7	Manual
	• Information related to imported/exported drugs for personal use • Information related to importers/exporters	Application form MPH212-8	Manual
	• Information related to imported/exported sterilized substances and medical equipment • Information related to importers/ exporters	Application form MPH212-9	Manual
	• Information related to imported raw materials for drugs manufacturing • Information related to importers • List of exporters by country	Application form MPH212-10	Manual
	• Information Related to registered drugs at MOPH	MedPrice Information System	ICT

4-Available ICT Systems

The Ministry of Public Health has been developing itself through the past years, by adapting customizable applications, internally developing new applications and contracting Information Systems to local companies for the development/customization of applications through self-financing and/or external budgeting. The automation has covered many of the Ministry's operations. Following are summaries of existing applications' status and objectives.

Graph 1: Existing ICT systems Connectivity



Administrative Systems

Transactions and Workflow Management System Application -TWFS

The objective of this system is to automate the registration and the workflow of MOPH transaction forms in different MOPH administrative units.

The Transactions and Workflow Management System is available in the Director General office (registration), the Directorate of Medical Care Division, The Service of hospitals, dispensaries and medical professions, the administrative Section of Medical Professions (Registration), the Service of Diwan (registration) and the Service of Pharmacy (Registration).

The main benefits of the system are relieving the staff of routine paperwork and tedious manual operations and searches; providing a better and faster service to citizens; standardizing the work methods and procedures; allowing to track the transactions and to know, at any time, the location and the status of a transaction or document; generating informational reports and statistics;

Personnel Management System

The aim of this system is to provide detailed and up to date information concerning the MOPH's workforce at both central and peripheral levels. The System is a comprehensive Personnel Management System. Employees can be tracked for education, previous employment history, skill, training, education, certification and any aspect of the employment history. In brief, the system has been designed to take care of all service activities of an employee since joining the ministry. The system was developed in-house and put in use in the personnel department since 1998, operating under Foxpro 2.5.

Budget System

In an attempt to fortify and speed up the work between the Ministry of Finance (MoF) and the other ministries, the MoF has developed a budget system (developed with VB6.0 and residing on SQL 2000) and has been deploying it in all ministries (public institutions and Directorates are not yet covered) allowing remote transfer of budget related information of the respective ministry to the MoF's databases for timely processing of money transfers. The system is deployed at MOPH since March 2006.

Distribution of Drugs System

This system is functioning in the center for distribution of drugs in the Quarantina area. It allows the handling of in(s) and out(s) of drug distributions for critical patients cases (such as cancer, aids, etc.). The application controls the patient's next medical visits according to day refill condition. Reports are generated listing the daily drug IN/OUT, drug consuming (budget) and diagnosis analysis based on location (ex: aids cases distribution over the country). In addition, network infrastructure and queuing system has been installed at the respective site. The system, granted by the World Health Organization (WHO), has been installed and properly running in the Quarantina area since the year 2000 running under Visual basic 6.0 and SQL database.

Drugs Stock Control System

In 1998, this system was initiated with the coordination of the World Health Organization (WHO) to help control the drug distribution for facilities such as hospitals, NGOs and others. The system is installed in the Central Drug Warehouse, Quarantina area, using Visual Basic 6.0 and SQL database. It mainly generates reports to monitor the drug budget for every facility, and enables the ministry to prepare the yearly drug tender (forecast).

MedPrice Information System

The MedPrice Information System is deployed in the Department of Importation & Exportation of Medicines since the year 2005. The main objective of the system is the price management of the registered drugs at MOPH.

The system generates information related to imported and produced locally drugs such as the prices of the product in the country of origin: public and ex-factory prices in their respective currencies, trade names, strength, pharmaceutical form, container, country of origin, the registration number. Also it generates information concerning the manufacturer, the agent and the production chain.
The system exports data to excel sheets and allow the generation of different lists such a drug public price list based on exchange rates issued by the minister.
The MedPrice system is based on FileMaker Pro Database.

National Database System – NDS (Narcotics Drugs)
The National Database System (NDS) is deployed in the department of Narcotics to support the department in collecting, aggregating, printing and transmitting (via electronic or similar media) data related to the Narcotics Drugs. The system generates statistics for import/export of narcotics drugs and psychotropic substances, annual statistics of production, manufacture, consumption, stock and seizures of narcotics drugs and it gives information on substance frequently used in the illicit manufacture of narcotic drugs and psychotropic substances. The system has been properly functioning since 2001 running on Oracle and lately has been upgraded to Oracle version 9i.

Time Attendance System
The system aims mainly at controlling the attendance of employees at the MOPH through biometric geometry-based recognition technology. The system facilitates time attendance with detailed reports on every aspect of an employee's behavior, including a history of the employees' work status (e.g. arrived early, left late, absent, etc.).
The system has been in place in the MOPH since November 2006 with 2 punching machines in the central location, and one machine in the Central Public Laboratory.

Medical Supplies Stock Management System
Among other issues, the department of Equipment and Procurement is responsible of distributing medical supplies on government hospitals, health centers and the office locations of the ministry. The distribution takes place in the Quarantina area where the ministry keeps the stock of Medical Supplies from medical equipment, to cleaning material. In order to properly control and track the distribution of medical supplies and control the level of inventory at the Quarantina location, the department of Equipment and Procurement was provided, for free, from the WHO a Medical Supplies Stock Management System. The system assists the respective personnel from the department in tracking and registering the distribution of medical supplies.

MOPH Website

Under the title of reinforcing the Health Information System, the Lebanese Ministry of Public Health has developed a new website with an advanced approach using the highest technology (www.public-health.gov.lb).
Through this important project, which forms a substantial part of the implementation of the e-government plan, the Ministry of Public Health wishes to become a nationally/globally knowledge-based health ministry providing services with overwhelming value to the government, citizens and customers nationwide contributing thereby to the Health Reform Program in Lebanon.

Through this website the MOPH provides some e-services such as tracking transactions forms by citizens, detailed information on the registration setup of the MOPH's related transactions forms as well as other informative data such as public drug price list, doctors' fees… This will contribute in relieving citizens from the burden of administrative procedures thus providing a better and faster service. Greater transparency and access to information on public administration processes will simultaneously strengthen citizen confidence in the public sector. The site is updated regularly to provide the public with the most up to date information.

Decentralization Systems

District Health Information System

The main objective of this system is the empowerment of the Health district manpower by improving the knowledge of ministry officials of health and health services in their areas of operation and their knowledge of other sectors with direct relevance to the health of the population such as education, environment, and NGO.
This system will help administrators in monitoring preventive, promotive and curative health activities and in evaluating progress in health. Also it will be a tool to monitor the diseases and their spread over the different areas allowing the ministry officials to plan for intervention and activities in an appropriate and timely manner which effectively addresses area-priorities. The system has been provided/funded by the WHO, the World Bank and the MOPH. The system was runs on Access XP and has functioned since 2001 in only 11 out of 25 centers. But, the system, lacking technical support, was prone to neglect.

PHC/Relation with NGOs Systems

Primary Health Care Information System (PHC)

Since 2002, the Ministry of Public Health has been working in-house on the PHC system for all health centers. In addition, the ministry worked on developing a centralized database for the collection of the peripheral centers' information. The

objective of this system is to organize and manage administrative and medical activities of primary health care centers. The major components of the system are

- The EMR (Electronic Medical Records) module: Management of EMR of patients including personal data, historical visits, services records.
- Personnel module
- Appointment module
- Drugs inventory module
- Accounting module
- Analysis, Reporting & Statistical module

Chronic medication program Information System

The chronic medications management information system is a web application developed originally to manage the dispensing of medications by the MOPH within different programs. The application is developed using visual studio 2008 and use SQL server 2005 as a database engine. It contains different sections such as patient's files, Medications stock control, center's data, medication's data, and it is able to generate reports and statistics. Electronic files of patients will be saved in a central database where all partners have the ability to get access to. Currently, it is being applied at a pilot level of almost one center per Qada as part of strengthening the Primary Health Care information system and to help, at a later stage, the referring of chronic disease patients from PHC and dispensaries to governmental hospitals at district level.

Hospital Care Systems:

Visa Issuing System

To connect the central office of the MOPH and its regional visa centers, an Oracle based Visa issuing system was deployed in 2003 to manage patients' admission to the contracted hospitals on the MOPH's expenses. The connection between the central and the regional offices is based on 8 LANs and 24 WANs connecting 24 visa centers to the central location. From the main functionalities of the system is to create a unified patient medical file, independent of the treatment place and visa issuing center, to offer automatic control over the visa issuance in the MOPH, to allow the ministry to view the history of every patient's file, to allow automatic rejections of patients who benefit from other public funds (Army, ISF, NSSF, CSC and GDSS), to control the frequency of the requests submitted per applicant and finally to retrieve accurate statistics to help managers to take the appropriate decision.

Billing System

To control and properly manage incoming bills from the private hospitals, a Billing System has been put under development and currently the application is being upgraded in terms of functionalities and technology. The system is intended to

check contracted hospitals' incoming bills received through remote connection to the ministry's database via web technologies. As such, the bills are entered by each hospital and transferred via diskettes to the central office of the MOPH. A new version of the system is being implemented that allows the bills to be entered by each hospital remotely. The system applies discounts on non flat rate bills and controls the flat rate bills and generates separation of fees together with the monthly settlement statements for the doctors and hospitals. The system also allows online registration of the discharge summary form and the cancer form, it provides information about the bed occupancy status by hospital and it is used as a tool for quality control for the admission diagnosis v/s discharge diagnosis and the diagnosis v/s procedures among others.

Social Security Systems

Interconnecting System

The system allows the MOPH and other public funds namely the Army, the Internal Security Forces (ISF), the National Social Security Fund (NSSF), the Civil Servants Cooperative (CSC) and the General Directorate of State Security (GDSS) to share information about eligibility of patients to avoid eligibility overlapping and double coverage, and relieves funding agencies from issuing non-eligibility certificates and as such relieves citizens from obtaining certificates of non-eligibility. The system builds an electronically interconnected database at the MOPH with beneficiaries in the different public funds containing demographic and eligibility information. The data transfer is done through daily automatic connection for downloading files containing the updated beneficiaries' information giving the public funds remote access to the centralized the MOPH database for searching purposes. The system is also integrated with the Visa/Billing system for control purposes.

Regulation Systems

Human Resources for Health System (HRH)

The system, funded by the WHO, manages personal and professional data for human resources working in health sector in Lebanon. It is implemented in the section of Medical Professions since January 2005 and its main functionalities are the issuing of licenses for medical and paramedical professions, the generating of statistical and standard reports and the scanning and archiving of related documents. The HRH system keeps records for every individual, including personal and identity information, professional and educational information.

The long-term objective of HRH is to enable high-level decision makers to apply data analysis for defining National Health policies and strategies. The MOPH has recently made

an agreement with Liban-Post allowing citizens to sends their related medical profession applications to the MOPH to relieve citizens from the burden of the administrative procedures.

Carte Sanitaire-GIS System

The Carte Sanitaire project was initiated in the year 2001. The main purpose was to build a reliable health status and requirements database to ensure proper health support distribution (i.e. distribution of hospitals and health centers) ensuring an "Equal Health Care Access". The project resulted in a GIS System under the name "Carte Sanitaire System" that holds layers of information on a geographical display of the map of Lebanon and generates, based on set key indicators, the proper recommendations. The information gathered covers locations of existing health institutions and hospitals, with detailed information on the services provided and their capacities (for example the number of beds in a hospital, the number of rooms, the type of service provided, etc.), in addition to public health related facilities (manpower, water sources, bakeries, etc…).

ESU Applications

The Epidemiological Surveillance Unit of the Directorate of Prevention is the national focal point for gathering information on the communicable diseases from hospitals, laboratories, medical centers, and blood banks and other health structures. Its duties are summarized by setting an ongoing, systematic collection, verification, analysis, interpretation, and dissemination of data regarding diseases and health events to those who need to known, for use in public health action to reduce morbidity and mortality and to improve health.

The surveillance system is based upon the collaboration of the hospitals, health centers, dispensaries, laboratories, private clinics and in coordination with different health services related to different ministries.

The Epidemiological Surveillance unit is currently relying on an EPIinfo system (free software provided by the US Center of Control Disease and Prevention as recommended by World Health Organization - WHO) and an EpiData (downloaded for free from www.epidata.dk website, also recommended by the WHO) used for developing national applications for data entry, database management and data analysis used for the epidemiological information system related to notifiable communicable diseases (Law of 31/12/1957). In 2007, 37 communicable diseases have to be notified from Lebanese physicians to the MOH.

The different created systems are used as tools for alerts generation, diseases and outbreak description, follow-ups. Also, to ensure feed back to health professionals and WHO, the applications generated automatic HTML outputs for the MOH website.

Health Programs Related Systems

AIDS Registration System

The SIDA Registration System was deployed in the AIDS unit in the late 1990s developed in-house using Foxpro 2.6. The system keeps track of the reported AIDS cases in Lebanon and generates unique code for each patient by combining a set of entered information. The system is connected to SPSS whereby the entered records get transferred to the SPSS for generation of statistical and analytical results and graphs. The program currently receives the reported cases on paper and enters these data into the system on premise.

Lebanese Intervention Coronography Registry (LICoR)

The non-communicable diseases program also working for the MOPH under the umbrella of the WHO (like the Cancer and the AIDS units) has, since 2004, a Coronography Registry system. The software has been locally developed and installed in 30 out of 37 Catheterization labs in the country. Data has also been provided from these 30 Catheterization labs, the remaining has been refusing to collaborate.

The system registers and tracks all Coronographies taking place in the Lebanese health institutions. The system holds demographical information and performs the appropriate analysis for forecasting and statistical purposes. The system accounts for the confidentiality of the data by allowing the entry of patients' initials only and generating a unique record entry.

Cancer Registry

The National Cancer Registry (NCR) data are derived from both capture and recapture systems. The passive capture system which is derived from the Drug Dispensing Center data of the MOPH, and the active recapture system from all pathology and hematology labs, private clinics and hospitals which are obliged to report the diagnosed cases of neoplasm. The reconciliation of reported cases from the two surveillance sources generates the total incidence. But, the follow up system on the cases is still missing, and some hospitals are reluctant to share the information emanating from their own registries due to privacy claims. In addition, information relating to patients covered by other public/private funds (NSSF, the Army, The ISF, Private insurance,…)are still missing. We suggest revitalizing the use of the unique ID system at the NCR, which was previously setup and have not been used. That way we guarantee not only the privacy concerns, but also we avoid double counting and provide a smoother follow-up on the cases.

From a primary look at the various departments at the organizational chart and the information generated by them, as well as the major responsibilities attached to them, it can be clear that duplication as well as cross flowing information to unconcerned departments do exist. Not only this, but it was also shown that there is information that are needed and yet not reported and information that are not needed, or duplicated but they are still reported. Besides, some of the ICT systems that were established did not find the sustainability they deserve for them to start generating dependable data and thus being enrolled in evaluation processes.

Defining the gaps:

There are three forms of gaps that can be defined:

Gap 1: or can also be called an information gap, which deals with the information that is still lacking, at the level of each unit, together with its primary source, and the form and periodicity of reporting.

Gap 2: information generation gap, which is mostly related to the existing information which is not processed either because of its form of availability or because of a lack in technical and human resources

Gap 3: the information flow gap, where the information is available, and it is generated but doesn't flow in a smooth manner through the various concerned units and stakeholders due to some bottlenecks or other hindering factors innate to the system.

Gaps in existing information by indicators of health

The sources of health information are many, ranging from routinely kept records, like hospital medical records, accounting department records, registries, vital registration, or they can be generated through targeted surveys. But, what are surely crucial aspects of those sources are the updatability and the quality of the available information.

In the current stage, there are some information that need to be complemented in order to be able to derive some important basic indicators of health. Currently, these indicators are either reported from surveys and studies, or estimated based on minimal available data.

Yellow shades stand for the indicators that are generated based on an estimate and having for baseline a survey generated data.

Red shades stand for a figure that is not currently generated due to lack of definition of its meaning and lack of details in data generation.

Green shades represent information available through optimal sources

Blue shades represent information that is available from optimum sources but which needs better flow of information

Demographic Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Total population	millions	All the inhabitants of a country, territory, or geographic area, total or for a given sex and/or age group, at a specific point of time.	Department of vital statistics	-Ministry of Interior (primary) -CAS (secondary)
Urban population	%	The percentage of total population of a country, territory, or geographic area living in places defined as urban, at a specific point of time, usually mid-year. The demarcation of urban areas is usually defined by countries as part of census procedures, and is usually based on the size of localities, and/or the classification of areas as administrative centers or in accordance to special criteria such as population density or type of economic activity of residents. There is no international agreed definition of urban areas, and national operational definitions may vary from country to country.	Department of vital statistics	Ministry of Interior (primary) -CAS (secondary)
Crude birth rate	per 1000 pop	The ratio between the number of live births in a population during a given year and the total mid-year population for the same year, usually multiplied by 1,000.	Department of vital statistics	-Ministry of Interior (primary)
Crude death rate	per 1000 pop	The ratio between the number of deaths in a population during a given year and the total mid-year population for the same year, usually multiplied by 1,000.	Department of vital statistics	-Ministry of Interior (primary)
Population growth rate	%	The annual average rate of change of population size, for a given country, territory, or geographic area, during a specified period. It expresses the ratio between the annual increase in the population size and the total population for that year, usually multiplied by 100.	Department of vital statistics	-Ministry of Interior (primary) -CAS (secondary)
Population < 15 years	%	The percentage of total population of a country, territory, or geographic area, under 15 years of age, total or a given sex and at a specific point of time, usually mid-year.	Department of vital statistics	-Ministry of Interior (primary) -CAS (secondary)
Population 65 + years	%	The percentage of total population of a country, territory, or geographic area, 60 (65+) years of age and over, total or for a given sex and at a specific point of time, usually mid-year.		
Dependency ratio	%	The average number of economically dependent population(defined as the sum of the population under 15 years of age plus the population 65 years of age and over) per 100 economically productive population (defined as the population between 15 and 64 years of age)		
Total fertility rate	rate per woman	The number of births a woman would have by the end of her reproductive life if she experienced the currently prevailing age-specific fertility rates from age 15 to 49 years.	Department of vital statistics	-Ministry of Interior (primary) -CAS (secondary) -PAPFAM DHS

Socioeconomic Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Adult literacy rate, 15 + years	Total Male Female	%	Department of Mother and Child and Schools (Service of social health)	Ministry of Education (primary) -CAS (secondary)
Gross primary and secondary school enrollment ratio	Total Male Female	%	Department of Mother and Child and Schools (Service of social health)	Ministry of Education (primary) -CAS (secondary)
Net primary and secondary school enrollment ratio	Total Male Female	%	Department of Mother and Child and Schools (Service of social health)	Ministry of Education (primary) -CAS (secondary)
Population with sustainable access to improved water source	%	Population with improved drinking water sources, in a given year, expressed as a percentage of the corresponding population of that year. Access to safe drinking water sources is defined by the availability of at least 20 liters of water per person per day from a source within 1 kilometer of walking distance. Improved drinking water sources are: household connection, public standpipe, borehole, protected dug well, protected spring, rainwater collection. Bottled water is not considered improved due to limitations in the potential quantity, not quality, of the water. Population with access to improved sanitation in a given year, expressed as a percentage of the corresponding population of that year, Excreta disposal systems are considered adequate if they are private and if they separate human excreta from human contact. Improved sanitation facilities are: connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine, ventilated improved pit latrine.	Service of Sanitary Engineering	-Ministry of Energy and Water -Ministry of transportation -Municipalities (MOI)
Population with access to improved sanitation	%			
Unemployed	%	The number of members of the total population or of a given sex of the economically active population, who are unemployed but are available to work and seeking employment. This includes members who have lost their jobs and those who have voluntarily left work, at a specific point in time, expressed as a percentage of the economically active population in total or by sex. An economically active individual is considered employed if he or she falls into one of the following categories: has in-currency or in-kind paid employment, is self-employed, works in a family business, or is not working temporarily for a particular reason.	Personnel section for Human Health Resources	-Ministry of Labor (Primary) -Syndicates of Human Resources for Health -CAS (surveys)
Smoking prevalence among adults, 15 + years	Total Male Female	%	-Department of Health promotion -Tobacco control program	-Surveys -Export/imports -Taxation (MO Finance)

Health Expenditure Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Gross domestic product per capita	US$ exchange rate	Average annual gross domestic product (GDP) per capita at constant market prices for each year of the time period expressed in current US$ (see exchange rate).	-National Health Accounts project	Ministry of Finance
Total expenditure on health per capita	Average US$ exchange rate	Sum of general government health expenditure (GGHE) and private health expenditure (PvtHE) expressed as per capita, US$ exchange rate.	-National Health Accounts project	Ministry of Finance ISF-GSF SSF NSSF CSC Army Household Survey (CAS) Private Insurance companies
General government expenditure on health per capita	Average US$ exchange rate	General government health expenditure (GGHE) expressed as per capita, US$ exchange rate		
Total expenditure on health as percentage of Gross domestic product	%	Sum of general government health expenditure (GGHE) and private health expenditure (PvtHE) expressed as percentage of GDP.		
General government expenditure on health as % of total health expenditure	%	General government health expenditure (GGHE) expressed as percentage of the total health expenditure (THE)		
Out-of-pocket expenditure as % of total health expenditure	%	Out-of-pocket expenditure, expressed as percentage of the total health expenditure (THE)		
General government expenditure on health as % of total government expenditure	%	General government health expenditure (GGHE) expressed as percentage of the total general government expenditure (GGE) that is spent on health.	-National Health Accounts project -Accounting Department	Ministry of Finance (the Government Budget
Ministry of health budget as % of government budget	%		-National Health Accounts project -Accounting Department	Ministry of Finance (the Government Budget

Human and Physical Resource Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Physicians	rate per 10,000 population	The number of physicians available per every 10,000 inhabitants in a population, at a given year, for a given country, territory, or geographic area.	Section of Health Professions	Syndicates and Orders
Dentists	rate per 10,000 population	The number of dentists available per every 10,000 inhabitants in a population, at a given year, for a given country, territory, or geographic area.		
Pharmacists	rate per 10,000 population	Number of pharmaceutical personnel (per 10 000 population)		
Nursing & midwifery	rate per 10,000 population	Number of nursing and midwifery personnel (per 10 000 population)		
Hospital beds	rate per 10,000 population	The number of hospital beds available per every 1,000 inhabitants in a population, at a given year, for a given country, territory, or geographic area.	Service of Hospitals and Dispensaries	Syndicate of Private Hospitals
Primary health care units and centers	rate per 10,000 population	Number of primary health care and health centers per 10 000 population.	Service of Hospitals and Dispensaries (Curative care) Department of Primary Health Care (Preventive Medicine)	MOSA Municipalities NGOs

Coverage with Primary Health Care Services:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Population with access to local health services	Total Urban Rural	%	Collective responsibility of curative care and preventive care directorate	Municipalities (MOI) CAS (surveys)
Contraceptive prevalence rate	%	Contraceptive prevalence rate is the proportion of women of reproductive age who are using (or whose partner is using) a contraceptive method at a given point in time.	Service of Social Health	PAPFAM
Antenatal care coverage	%	Percentage of women who used antenatal care provided by skilled health personnel for reasons related to pregnancy at least once during pregnancy, as a percentage of live births in a given time period.	Service of Social Health	PAPFAM or CAS surveys
Births attended by skilled health personnel	%	Percentage of live births attended by skilled health personnel in a given period of time. A skilled birth attendant is an accredited health professional—such as a midwife, doctor or nurse—who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. Traditional birth attendants, trained or not, are excluded from the category of skilled attendant at delivery.	Service of Social Health	PAPFAM or CAS surveys
One year olds immunized with:	BCG DPT3 OPV3 Measles HBV3	%	Service of Social Health EPI program District Physicians	Ministry of Interior
Pregnant women immunized with two or more doses of tetanus toxoid	%	Proportion of pregnant women having received the second or superior dose of tetanus toxoid in a given year. Since the number of pregnant women is generally not available, the number of live births or estimated newborn babies is used as the denominator.	Service of Social Health EPI program District Physicians	Ministry of Interior

Health Status Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Life expectancy at birth		Total Male Female	Department of Vital Statistics	Ministry of Interior (Births, and deaths by age) Surveys (PAPFAM) for mortality rates
Newborns with low birth weight	%	Percentage of live born infants that weigh less than 2500 g, for a given time period.	Service of Social Health (Mother and Child department)	Hospitals PAPFAM
Children aged <5 years: underweight for age	%	Percentage of underweight (weight-for-age less than -2 standard deviations (SD) of the WHO Child Growth Standards median) among children aged less than 5 years.	Service of Social Health (Mother and Child department)	PAPFAM
Perinatal mortality rate	per 1000 total births	Number of deaths of fetuses weighing at least 500 g (or when birth weight is unavailable, after 22 completed weeks of gestation or with a crown-heel length of 25 cm or more) plus the number of early neonatal deaths occurring during the first seven days of life, per 1000 total births	Service of Social Health	NCPNN Ministry of Interior Surveys (PAPFAM)
Neonatal mortality rate	per 1000 live births	Number of deaths during the first 28 completed days of life per 1000 live births in a given year or other period.	Service of Social Health	Surveys (PAPFAM)
Infant mortality rate	per 1000 live births	Infant mortality rate is the probability of a child born in a specific year or period dying before reaching the age of one, if subject to age-specific mortality rates of that period.	Department of Vital Statistics	Ministry of Interior
Under 5 mortality rate	per 1000 live births	Under-five mortality rate is the probability of a child born in a specific year or period dying before reaching the age of five, if subject to age-specific mortality rates of that period.	Department of Vital Statistics	Ministry of Interior
Maternal mortality ratio	per 100,000 live births	Number of maternal deaths per 100 000 live births during a specified time period, usually 1 year.	Department of Vital Statistics	Ministry of Interior

Selected Morbidity Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Malaria	Number of reported cases Incidence rate	Number of confirmed cases in a period of time, usually one year	Service of Preventive Medicine (Malaria Program)	Hospitals Private clinics Health centers
Measles	Number of reported cases Incidence rate	Number of confirmed cases in a period of time, usually one year	Service of Preventive Medicine (ESU)	Hospitals Private clinics Health centers
Tuberculosis	Number of reported cases Notification rate Incidence rate	Number of confirmed cases in a period of time, usually one year	Service of Preventive Medicine –TB program	Hospitals Private clinics Health centers
Meningococcal meningitis	Number of reported cases Incidence rate	Number of confirmed cases in a period of time, usually one year	Service of Preventive Medicine (ESU)	Hospitals Private clinics Health centers Malaria program
AIDS	Estimated number of PLHIV Reported number of people receiving ART Treatment coverage	Number of confirmed cases in a period of time, usually one year	Service of Preventive Medicine –National AIDS Program	Hospitals Private clinics Health centers Malaria program

Selected Mortality Indicators:

Indicator	Unit of Measurement	Definition	MOPH Department Concerned	Concerned Stakeholders
Registered deaths under 5 due to:	Intestinal infectious diseases (ADD)	Deaths from the specified cause in the total population, segregated by sex	Department of Vital Statistics	Ministry of Interior (Deaths by cause and age) Hospitals
	Acute Respiratory Infections (ARI)			
Mortality rates from communicable diseases	Total			
	Male			
	Female			
Mortality rates from diabetes melitus	Total			
	Male			
	Female			
Mortality rates from ischemic heart diseases	Total			
	Male			
	Female			
Mortality rates from cerebrovascular diseases	Total			
	Male			
	Female			
Mortality rates from malignant neoplasms	Total			
	Male			
	Female			

Definition of Stakeholders in Health

Stakeholders in health information are all institutions that are producers or users of health information in whatever form might they have it. They can be schematized with the following graph.

Interoperability with Stakeholders

Tutelage/Ownership	Dept./Stakeholder	Information needed	Periodicity
Ministry of Interior	DGPS	• Death Certificate • List of births • List of Deaths	Monthly
	ISF	• Information concerning the beneficiaries • Road Accidents	Daily
	GSF	• Information concerning the beneficiaries	Daily
Presidency of the Council of Ministers	State Security Forces	Information concerning the beneficiaries	Daily
	Civil Servants Coop	Information concerning the beneficiaries	Daily
	Central Administration of Statistics	Data generated through surveys	Upon availability
Ministry of Education		School health program statistics	yearly
Ministry of Defense	•Army Medical Brigade	Information concerning the beneficiaries	Daily
Ministry of Finance	Lebanese Customs (Smuggling Control Unit)	Illegal transport of drugs across the borders	Prompt notification
	Statistics unit	• Health expenses by category • Health expenses by FA	yearly
Ministry of Economy &Trade		• Nb. Of health policies sold • Total premiums paid for health risks	yearly

		• Total claims done for health risks	
Ministry of Labor	NSSF	Information concerning the beneficiaries	Daily
Private Clinics		• Nb. Of clinics per qada • Nb. Of clinics per specialty per qada	yearly
Private Hospitals		• Nb. Of bills per FA • Nb. Of patients per FA • Deaths by cause • Cost per FA • ALOS per FA • ALOS per category of ICD10 • Performance Indicators	Monthly/yearly
Academic and Research institutions		• Health systems research • Clinical studies	Upon availability
Governmental Hospitals		Performance Indicators	yearly
Pathology Labs		• Nb. Of confirmed cases of cancer by category Nb. Of confirmed cases of cancer by qada	Immediate (monthly)
Health centers		• Nb. of drugs distributed per qada • Nb. of drugs distributed per category of disease ICD • Nb. of patients per qada per month Nb. of patients per category of disease ICD	monthly
Medical & para-medical Syndicates & Orders		• New enrollees during the year • Change in status of professionals	yearly
Ministry of Social Affairs		• Number of Disability cards issued • Services provided by health centers	yearly

Ministry of Environment		• Septic disposal of wastes	Monthly reports
NGOs	•YMCA •Red Cross	• Road accidents • Number of beneficiaries by variable	Monthly/yearly
International Organizations	•WHO •UNICEF •WB •Others	• Health Indicators and reports • Number of vaccines by variable • Coverage rate of vaccination	Yearly and upon request

Proposed Solution

One of the very important problems encountered during the current assessment was the interpersonal relationships and ego-driven resistance to share the information, or to cooperate in a way or another. This fact inspired the following solution in a manner to be able to smoothen the flow and solve the problem without touching to the bureaucratic affiliation of individuals. As an example, the technical committee for drugs does not immediately notify the concerned departments (drug imports-exports/MedPrice information system) of the decisions taken at committee meetings due to unorganized flow of information, which results in delays in updating the information of the drugs database. In addition, some hindered flow of information results from a built in conflict of responsibilities between two departments in the same directorate (Mother and Child, and Primary Health Care) and sometimes between two directorates (Health Centers-Directorate of prevention as opposed to Dispensaries-Directorate of medical care). On top of that, the lack of capacity in terms of qualified personnel or equipment contributed from one part to the lack of information, but also to its quality. It is essential to highlight an intrinsic problem related to the Lebanese public administration as a whole, which relates to the high average age of employees coupled with the lack of employment policy which resulted in an aging administration lacking flexibility and potential for improvement.

Currently, the MOPH is in the process of contracting with a number of employees as operators to be distributed to the various district health departments.

-Solution for information gap/flow inside the MOPH: The Intranet

In the information generation gap, the transactions forms that are still lacking are being currently worked upon, with that being done, the data availability pertaining to all forms of interaction between citizens and the MOPH would be completed.

The problem of flow of information can be solved by creating an application which will be a pool of information, web-enabled and protected by rights of data usage defined by the duties and responsibilities of each department.

What is an intranet?

An intranet is a private computer network based on the communication standards of the Internet. It is smaller version of the Internet that only the employees of an organization can see.

Why build MOPH intranet? A better answer is that it is an effective tool to combat the waste of time, effort and materials within an organization at the same time generating new opportunities for collaboration and productivity.

MOPH departments are physically dispersed. The intranet can act as vital glue which bonds the units together. Properly used, it reinforces MOPH values and objectives on a day-to-day basis. It can communicate vital information in a fast and efficient manner.

The Intranet's content

The intranet's content and software are many and include business applications, organizational information, departmental transaction forms, Data warehousing, internal forums & collaborations, news & messages from top executives, business reports, points of interest, maps of the area, and upcoming training events etc.

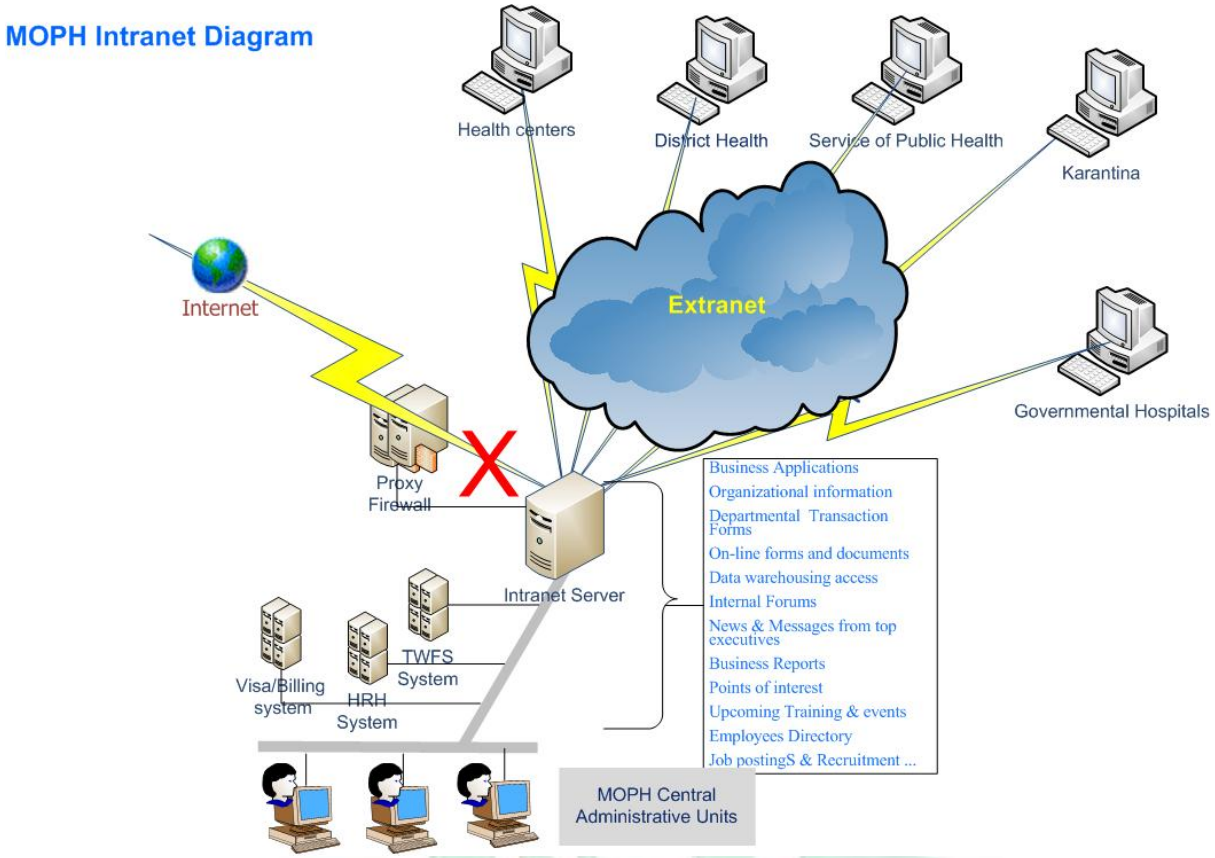
In addition it provides a common interface for MOPH information systems and acts as a resource centre for the ministry. It also facilitates interdepartmental cooperation and saves hard and soft resources. Principle uses of intranets are similar to the uses of the Internet like file transfers, electronic mail (e-mail) and communication, information dissemination etc. But unlike the Internet, which can be accessed and used by anyone and which also allows to logon to a computer from a remote location, the intranet is only and strictly accessible within the internal local area network (LAN) of MOPH alone.

Benefits of an Intranet

A good example of a tangible benefit is the reduction in paper cost from moving processes online. Certain statistics quote that 18% of corporate printed material becomes outdated after 30 days. Imagine that after 60 or 90 days. Now, imagine if that material were always online and current.

The benefits of intranet creation can be summarized as below.

- Builds a culture of sharing and collaboration
- Increases communication
- Increases Productivity and Effectiveness
- Improves decision making
- Breaks down bureaucracy
- Facilitates organizational learning
- Empowers users
- Saves time and money,
- Better information faster
- Inexpensive to implement
- Easy to use, just point and click
- Scalable and flexible
- Connects across disparate platforms



-Solution for information gap between MOPH and stakeholders: The Health Information Management Unit (HIMU)

It is proposed to create a unit called a Health Information Management Unit, which would serve as a data warehouse including a data collection section, data quality control section and data dissemination section. This unit will be under the direct supervision of the Director General and will be the formal interface body for all information getting inside and outside of the Ministry.

The main objectives of this unit are to:

- Define where and how the data is collected and by whom
- Define how the data flows between the various MOPH departments
- Define who has access to what information
- Who makes decisions based on that information

Due to the fact that the MOPH's infrastructure and automation was done on incremental phases depending on the availability of funds, loans and/or grants,

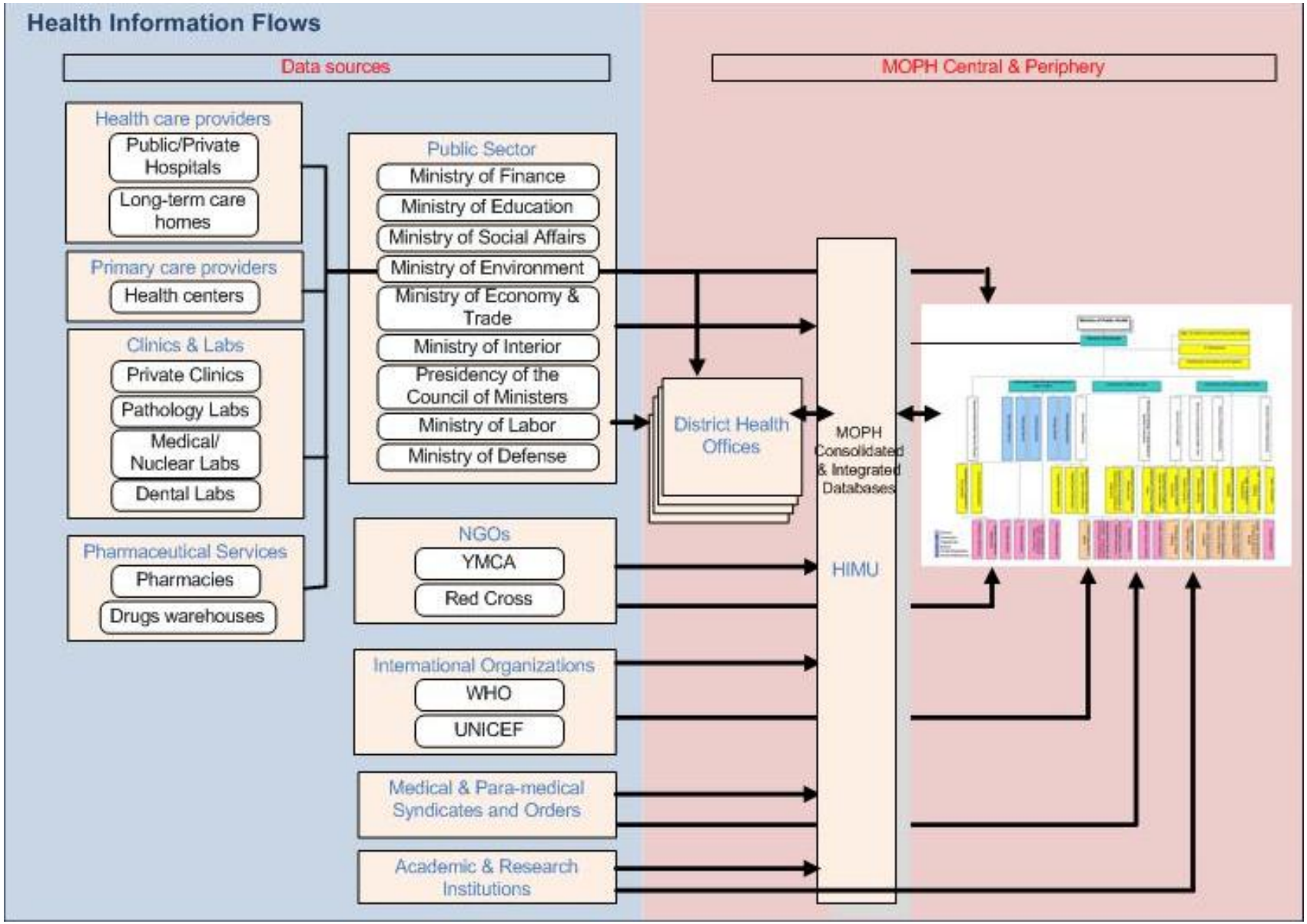
the ministry's infrastructure is currently not properly organized, ICT systems are developed in a segregated way without any communication interfaces and this has lead to isolated systems.

The major constraint in this HIMU is to perform first of all information technology systems integration and this by linking together different ICT systems and software applications physically or functionally. Integration involves joining the different subsystems together by "gluing" their interfaces together

An alternative option would also include the endorsement of the new organizational chart of the MOPH in which the directorate of planning would be the host of the HIMU together statistics and IT departments.

The data sharing between some stakeholders reach the HIMU through the districts, while other stakeholders report directly to the HIMU depending on the nature of information.
The HIMU will operate through satellite centers at the level of administrative districts, these satellite centers are the district health departments after revising the forms at the district level and upgrading the District Health Information System previously developed. This DHD will have for responsibility to collect the information at the district level in a timely manner; and the collaboration with all involved stakeholders at local level will happen through focal points which will insure the timeliness and quality of the data.

The proposed following diagram shows the flow of Health Information between stakeholders and different departments of MOPH and depicts a more organized, efficient and more sustainable way of managing health information:


Health Information Flows
Data sources
MOPH Central & Periphery
Health care providers
Public/Private Hospitals
Long-term care homes
Primary care providers
Health centers
Clinics & Labs
Private Clinics
Pathology Labs
Medical/ Nuclear Labs
Dental Labs
Pharmaceutical Services
Pharmacies
Drugs warehouses
Public Sector
Ministry of Finance
Ministry of Education
Ministry of Social Affairs
Ministry of Environment
Ministry of Economy & Trade
Ministry of Interior
Presidency of the Council of Ministers
Ministry of Labor
Ministry of Defense
NGOs
YMCA
Red Cross
International Organizations
WHO
UNICEF
Medical & Para-medical Syndicates and Orders
Academic & Research Institutions
District Health Offices
MOPH Consolidated & Integrated Databases
HIMU

Plan of action and steps for implementation:

The proposed management of the solution has two wings, one administrative and one technical.

For the administrative wing, the establishment of the HIMU at the MOPH central level which will be under the direct supervision of the Director General of Health will require a decree and a budget proposal together with clear setting of responsibilities in order not to create conflict of responsibilities with the existing IT department and the vital statistics department.
At the district level, the strengthening of the District Health Department with the involvement of all stakeholders will be discussed in the workshops that are to be held, one with district physicians and another with all stakeholders.

The technical wing involves both the central level and the district level. At the central level, the implementation of an Intranet will increase the collaboration and the sharing of information between MOPH departments.
On the same line of thinking, the peripheral technical level will involve the upgrading of the District Health Information System that was a joint effort of WHO, the World bank and the MOPH, and which was implemented in pilot in some districts in the year 2000.

Since the basic building block of the proposed HIS involves the MOPH at both central and peripheral level, the steps for implementation will be the following:

1. The organization of an In-house workshop which would serve as a consultation meeting involving the MOPH administrative units, both at the central and peripheral levels, so that priorities and needs will be set in terms of human resources and ongoing training workshops, as well as technical equipments needed and a performance budget plan will be done to execute the identified activities. In this workshop, clarification and agreement upon the information that are needed from other departments inside the ministry and from stakeholders outside the ministry will be discussed and the concept of the intranet will be discussed. Moreover, in an attempt to simplify the administrative responsibilities of the district physicians, a point will be raised to aggregate all the reports that are required to be sent every month to the central administration into one unified standard form.

2. Conducting a stakeholders' workshop, in which the launching of the National Health Information System will be done. Moreover, revision and comments on the information flow diagram will be tackled. In that workshop, the stakeholders will be asked to define their collaborating

administrative units and focal points in order to establish a steering committee.

3. unification and standardization of the District Physician monthly form

4. Defining the terms of reference of the newly hired operators to be the responsible persons for data gathering at the district level and collaboration with the health information management unit at the central level.

Required Assistance from WHO:

- Support of WHO is highly appreciated for the formation of a team to supervise the implementation of the plan. Due to the fact that the majority of the work will be the setting up of a system in which all departments will be involved, and in order to facilitate the activities, we suggest that the Director General be the team leader to execute the plan.

- Technical collaboration of WHO in the two workshops to be held.

- Automation of some of the departments at the MOPH central level.

- Provision of 25 PCs and printers to the district health departments to perform the required responsibilities

- Assistance in the upgrading of the District Health Information System to newer technology

- Assistance in the implementation of the Intranet.

- Provision of an internet connection for districts.

- Setting up the intranet application between the MOPH various units at both central and peripheral levels

- Training the newly hired operators on the new system

- Performing a pilot project for the new system in one or two districts before generalization to all districts.

Proposed Timetable:

Activity	Approximate Time
In-house workshop for various MOPH departments at central and peripheral levels	During the rest of 2009
Automation of key departments at MOPH	Jan-Dec 2010
MOPH information systems' integration at HIMU and setting up linkages that will allow directorates to report to the DG routine and ad hoc information	Jan-Dec 2010
Setting up priority variables for national concern (what information and in what periodicity)	Jan-Feb 2010
Upgrading the District Health Information System to higher technology	Jan-Mar 2010
Training the newly hired operators on the new system	April 2010
Stakeholders workshop	May 2010
Thematic testing of the system on priority areas (like maternal and infant mortality, vaccination, epidemiologic surveillance,..) for 1 year	June 2010-June 2011
implementation of the intranet and setting up the intranet system between various MOPH departments at various central and peripheral levels	Jan-2011

ANNEX 1

List of application forms submitted to the Drugs Committee at MOPH for drugs dispensing

Application Form	Reference#
Drugs for Renal Insufficiency Therapy	MPH12-1
Psychotropics	MPH12-2
Antineoplastic Drugs	MPH12-3
Drugs for Central Nervous System Diseases	MPH12-4
Drugs for Diabetes Insipidus Therapy	MPH12-5
Drugs for Enuresis Therapy	MPH12-6
Drugs for Hemophilia Therapy	MPH12-7
Déficit en hormone de Croissance au LIBAN- Fiche de données	MPH12-8
Drugs for Kidney & other Organ Transplantation	MPH12-9
Drugs for Peritoneal Dialysis	MPH12-10
Criteria for the Diagnosis of Growth Hormone Deficiency	MPH12-11
Drugs for Guillain Barre Therapy	MPH12-12
Drugs for Endometriosis Therapy	MPH12-13
Inclusion for Treatment for Hepatitis B&C	MPH12-14
Intravenous Immunoglobulin Administration for Idiopathic Thrombocytopenic Purpura or Kawasaki	MPH12-15
Drugs for Osteoporosis Therapy	MPH12-16
Drugs for Precocious Puberty Therapy	MPH12-17
Drugs for Primary Immune Deficiency Therapy	MPH12-18
Drugs for Antiretroviral therapy (Initial Request)	MPH12-19
Drugs for Antiretroviral therapy (Renewal Form)	MPH12-20
Products for Pediatric Metabolic Diseases and Chronic Diarrhea	MPH12-21
Drugs for Multiple Sclerosis Therapy	MPH12-22
Drugs for Hepatitis Therapy (End of Treatment (1 year))	MPH12-23
Drugs for Hepatitis Therapy (Monthly Surveillance)	MPH12-24